

JP-A-4-238984

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CLAIMS

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## [Claim(s)]

[Claim 1] A keeping means to have the torsion spring which it balances [ torsion spring ] with an aperture shoji and makes this aperture shoji stand it still in the location of arbitration, A means for it to be included in the sliding object and this sliding inside of the body to which an aperture shoji is connected with this keeping means, and it shows this aperture shoji up and down along with the door post of a sash, and to adjust the keeping force of torsion spring is provided. The above-mentioned adjustment means The lining puck which brakes the shaft and this adjustment shaft which twist torsion spring and adjust the keeping force, and holds the keeping force, Trimming devices of a vertical-movement aperture which have the attachment component always [ to the braking direction / turning-effort ] given while pushing for braking by revolution of the both directions of this lining puck on an adjustment shaft or holding the cam side made to have been enough separated from an adjustment shaft for braking discharge, and the above-mentioned lining puck.

[Claim 2] Said adjustment shaft is inserted pivotable into the bearing hole of the lengthwise direction of a sliding object, and said cam side is formed in the above-mentioned bearing hole. Said lining puck is inserted between an adjustment shaft and a cam side, and is held with the hole of the tubed attachment component by which fitting was carried out to the adjustment shaft pivotable. Trimming devices of the vertical-movement aperture containing the spring which the lever which rotates it in the discharge direction is prepared [ spring ] in this attachment component, and makes an attachment component always energize in the braking direction further according to claim 1.

[Claim 3] Said lining pucks are the trimming devices of the vertical-movement aperture according to claim 2 prepared so that it might be arranged so that an adjustment shaft may be surrounded by plurality, and said cam side might also correspond to each lining puck. [ two or more ]

[Claim 4] The cam sides of the bearing hole of said sliding object are the trimming devices [claim 5] of the vertical-movement aperture according to claim 3 formed in the arc to which a radius becomes large as it goes to a hoop direction. The cylinder which it was further fixed to the door post of a sash, and the aforementioned keeping means surrounded said torsion spring, and fixed with the upper bed of the spring, Only a revolution is connected with this cylinder possible. To the soffit of torsion spring A fixing \*\*\*\* nut, The spiral lever which was inserted possible [ vertical movement ] into torsion spring, and screwed [ nut / above-mentioned ], and was connected with the adjustment shaft pivotable in one is provided. These spiral levers are the trimming devices of the vertical-movement aperture according to claim 4 which rolls and fastens torsion spring through a nut at the time of the descent, and goes up through a nut by rewinding [ of torsion spring ].

[Claim 6] Said lining pucks are the trimming devices of a vertical-movement aperture given in either from claim 1 formed in the shape of a parallel roller to claim 5.

[Claim 7] Connection of said spiral lever and accommodation shaft is the trimming devices of a vertical-movement aperture given in either from claim 1 made by engagement at the pin combined with the hook connected with the accommodation shaft, and the spiral lever to claim 6.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the trimming devices of a vertical-movement aperture.

[0002]

[Description of the Prior Art] In the trimming devices of a vertical-movement aperture, what used the torque of torsion spring for the balance with an aperture shoji is known, and there are a thing it was made to make adjustment of the torque rotate an adjustment shaft to an one direction by the ratchet mechanism, and a thing which gave the damping force by the tight-binding force of a coiled form brake spring to the adjustment shaft.

[0003]

[Problem(s) to be Solved by the Invention] In the above-mentioned conventional trimming devices, although the thing using a ratchet mechanism is convenient for eye winding up of torsion spring, rewinding of it is impossible and it cannot adjust a torque. Although either eye winding up of torsion spring or rewinding can do the thing using a brake spring, torsion spring is automatically rewound by reduction of the damping force by the uncertainty of the damping force of the brake spring, or weakening of a brake spring, as a result it becomes impossible to use it, and actuation of eye winding up of torsion spring or rewinding cannot be performed lightly because of a brake spring, it is heavy and the assembly of a brake spring is not still easier.

[0004] This invention can perform certainly and easily, and lightly moreover adjustment of the keeping force of the keeping means for the apertures of vertical movement, damping force big moreover is acquired, and it can ensure maintenance of the keeping force over a long period of time, and is simple for the configuration, and tends to offer trimming devices with easy fabrication assembly.

[0005]

[Means for Solving the Problem] A keeping means to have the torsion spring mutually hung with an aperture shoji in order that this invention may attain the above-mentioned object, The sliding object to which an aperture shoji is connected with this keeping means, and it shows this aperture shoji up and down along with the door post of a sash, A means for it to be included in this sliding inside of the body, and to adjust the keeping force of torsion spring is provided. The adjustment shaft for the keeping force of torsion spring in the above-mentioned adjustment means, The cam side the lining puck for these adjustment shafts and for actuation of this damping force and the attachment component which always becomes unable to give the turning effort to the braking direction while holding the above-mentioned lining puck are included.

[0006]

[Example] It explains concretely, referring to a drawing per example of this invention below.

[0007] An aperture shoji (1) moves up and down along with the guide rail (3) and ( drawing 4 ) of a door post (2) of a sash. This aperture shoji (1) is hung by the door post (2) in the state of keeping by the keeping member (4) used as a keeping means, and ( drawing 1 ), and stands it still in the location of arbitration.

[0008] The cylinder by which a keeping member (4) is prolonged in the vertical direction, and an upper bed is connected with a door post (2) by the pin (5) and ( drawing 1 ) (6), The nut (7) with which only the revolution was connected with the soffit of this cylinder possible, and the spiral lever which it is inserted possible [ vertical movement ] into the above-mentioned cylinder, and the soffit penetrates a nut (7) in the state of screwing, and projects from the soffit of a cylinder (6) to the method of outside (8), The torsion spring (9) around which the spiral lever (8) was looped within the above-mentioned cylinder (6) was provided, the upper bed of torsion spring (9) fixed to the upper bed of a cylinder (6) (not shown), and the soffit of torsion spring has fixed in the nut (7). A spiral lever (8) rotates a nut (7) by the drop, and rolls and fastens torsion spring (9), and torsion spring (9)

reverses a nut (7) by the rewinding, and it commits it so that a spiral lever (8) may be raised. A spiral lever (8) is connected with a shoji (1), and if the torque which balances with torsion spring (9) in a shoji (1) and its maximum climb location is given, torsion spring (9) can always be mutually hung with a shoji, can make a shoji able to stand it still in the location of arbitration, and, moreover, can make a shoji go up and down by the small force.

[0009] Mostly, the sliding inside of the body (10) is mainly constituted from a tubed part (12) formed in one by the part (11) and this part of a rectangular parallelepiped, and is included in them possible [ sliding in the guide rail (3) of the door post (2) of a sash ].

[0010] A rectangular parallelepiped part (11) has the sliding slot (13) of the vertical direction of the both sides, fits into the flange (14) which this sliding slot expects to the effective area of the guide rail (3) of a door post (2), and ( drawing 4 ) possible [ sliding ], and moves a sliding object (10) up and down along with a guide rail (3). The rectangular parallelepiped part (11) is connected so that it has a lateral bearing hole (15) and lateral ( drawing 5 ) in the lower part, and fitting of the revolution of a revolving shaft (16) may be made free into this bearing hole (15), fitting of the connection arm (18) may be carried out to the communicating pore (17) of this revolving shaft and a connection arm (18) and a revolving shaft (16) may be rotated in one. It incorporates and fixes ranging from the soffit to a kicking rail (20) of the stile (19) of a shoji (1), and a connection arm (18) makes a shoji a center of rotation, and a revolving shaft (16) is tilted to an interior-of-a-room side from a vertical position to a horizontal position in it. By the tilting, the lateral surface of the glass (21) of a shoji (1) can be cleaned safely [ in an interior-of-a-room side ] and easily.

[0011] It has an amplification hole (23) and ( drawing 5 ). the bearing hole (22) and this bearing hole which penetrated a part for a tubed part (12) in the vertical direction — reams — While the adjustment shaft (24) used as an adjustment means for torsion spring (9) in this bearing hole and an amplification hole is inserted pivotable and the shank (25) of the upper bed projects from a part for a tubed part (12) to the upper part, a part of shank (26) of a soffit has projected under [ for a tubed part (12) ]. A shank (27) to the shank (25) of the upper bed to which an adjustment shaft (24) fits into the bearing hole (22) for a tubed part (12) is the same diameter, and the downward shank (26) is formed in the bigger diameter than a bearing hole (22) and a shank (27) from the bearing hole (22) ( drawing 5 R> 5 ). An adjustment shaft (24) can only rotate the configuration and the interval which an adjustment shaft (24) is inserted from a lower part into a bearing hole (22), and the circular sulcus (29) of the adjustment shaft (24) corresponding to the location of the upper bed peristome (28) of a bearing hole (22) is made to carry out fitting of the lock ring (30), prevent migration in the lower part of an adjustment shaft (24), and prevent the migration to the below-mentioned upper part. It has a slot (31) in that upper bed, the soffit of a hook (32) is inserted in this slot (31), and the adjustment shaft (24) of each other is connected with the hole (34) of a hook (32), and the hole (35) of an adjustment shaft (24) through a lock pin (33). This hook (32) is connected with the spiral lever (8) by the pin (36) and the pin (37). Thereby, while an adjustment shaft (24) is hung by the spiral lever (8), a sliding object (10) is hung, a sliding object (10) supports a shoji (1) through a revolving shaft (16) and a connection arm (18), and the shoji (1) is lifted by the keeping member (4).

[0012] The adjustment means of the torque of the torsion spring (9) of a keeping member (4) possesses the lining puck (38) which gives damping force to the adjustment shaft other than the above-mentioned adjustment shaft (24), and the cam side (39) which forces this lining puck on an adjustment shaft and the attachment component (40) which moves a lining puck in the braking direction and the discharge direction while holding the above-mentioned lining puck. A lining puck (38) is a cylinder koro-like thing, and it is arranged at two-piece regular intervals so that the surroundings of an adjustment shaft (24) may be surrounded. The cam side (39) is formed in two-piece regular intervals so that it may correspond to the inner skin of the amplification hole (23) of a sliding object (10) at a lining puck (38). This cam side (39) is formed in the arc to which a radius becomes large as it goes to a hoop direction. The attachment component (40) had the tubed part (41), and this tubed part (41) has fitted into the amplification hole (23) of the limb (26) of an adjustment shaft (24), and a sliding object (10). While the upper bed of a tubed part (41) engages with the step (42) of a bearing hole (22), the soffit engaged with the flange (43) of an adjustment shaft (24), and has prevented the migration to the upper part of an adjustment shaft. a tubed part (41) — that peripheral wall — a breakthrough (44) — having — this hole — the lining puck (38) of the tubed koro is inserted inside. An attachment component (40) has the lever (45) radially prolonged from a tubed part (41), and this lever (45) is rocked between two stoppers (46) of the base of a sliding object (10), and (47). When the lever (45) has bumped into the stopper (47), a lining puck (38) takes the deepest location of a cam side (39), and is in a neutral condition, and it is not pushed against an adjustment shaft (24), but an adjustment shaft is in the condition of not braking. If a lever (45) is rotated until it bumps into other stoppers (46) in the direction of an arrow head (A), a lining puck (38) will be pushed in respect of a cam (39), and

will give damping force to an adjustment shaft (24). Fitting was carried out to the tubed part (41) of an attachment component (40), the end was hooked on the attachment component side, the other end was hooked on the sliding object side, and the volume spring (49) has always given the turning effort to the direction braked to an attachment component (40), and holds the braking condition of an adjustment shaft (24).

[0013] An adjustment shaft (24) has a slotted hole (50) in that soffit side, inserts the edge of a blade of a driver in this slotted hole, and rotates. If the torque of torsion spring will increase if the damping force over this shaft is made in the condition of being canceled by actuation (the direction of arrow-head A) of a lever (45) and turns an adjustment shaft (24) in the direction of an arrow head (A), and a revolution of an adjustment shaft (24) turns clockwise, a torque will decrease. In addition, it is also made that rewinding [ of torsion spring (9) ] cancels the damping force over an adjustment shaft (24). Thus, the torque of torsion spring (9) is adjusted so that it may balance with a shoji proper.

[0014] A locking means is formed in the top rail (51), and a shoji (1) prevents that a shoji rotates to the circumference of a revolving shaft (16) by locking of this means, and permits a revolution of a shoji in release. The locking member (52) as this locking means possesses the locking rod (54) inserted possible [ sliding in a case (53) and this case ], and the locking rod (54) is always energized in the locking direction by means of a spring (not shown). The apical surface is formed in an arc and, as for a locking rod (54), it has a tongue (55) further. The apical surface of a locking rod (54) fits into a cylinder (6), and moves up and down with a shoji (1) by making the cylinder into a slideway. This locking rod (54) is pinched by the door post of a sash, and prevents tilting of a shoji (1). If a locking rod (54) is retreated in a lead-in location with a tongue (55), a locking rod (54) will move outside from an engagement location with the door post (2) of a sash, will be in a release condition, and will enable tilting of a shoji (1).

[0015]

[Effect of the Invention] As a means to adjust the torque of the torsion spring (9) which balances with an aperture shoji, this invention A lining puck (38) is forced on the adjustment shaft (24) made to rotate torsion spring in respect of a cam (39). Give damping force or Since it is constituted so that discharge of forcing of the lining puck is enabled in a cam side, and may hold the above-mentioned lining puck by the attachment component (40), the turning effort of the braking direction may always be given to this attachment component, it may change into a braking condition and it may change into a braking discharge condition by making it reverse Adjustment of the keeping force of the keeping means for the apertures of vertical movement can be performed certainly and easily, and lightly moreover, damping force big moreover is acquired, and maintenance of the keeping force can be ensured over a long period of time, and the configuration is easy, and fabrication assembly is easy.

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TECHNICAL FIELD

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[Industrial Application] This invention relates to the trimming devices of a vertical-movement aperture.

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PRIOR ART

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[Description of the Prior Art] In the trimming devices of a vertical-movement aperture, what used the torque of torsion spring for the balance with an aperture shoji is known, and there are a thing it was made to make adjustment of the torque rotate an adjustment shaft to an one direction by the ratchet mechanism, and a thing which gave the damping force by the tight-binding force of a coiled form brake spring to the adjustment shaft.

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EFFECT OF THE INVENTION

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[Effect of the Invention] As a means to adjust the torque of the torsion spring (9) which balances with an aperture shoji, this invention A lining puck (38) is forced on the adjustment shaft (24) made to rotate torsion spring in respect of a cam (39). Give damping force or Since it is constituted so that discharge of forcing of the lining puck is enabled in a cam side, and may hold the above-mentioned lining puck by the attachment component (40), the turning effort of the braking direction may always be given to this attachment component, it may change into a braking condition and it may change into a braking discharge condition by making it reverse Adjustment of the keeping force of the keeping means for the apertures of vertical movement can be performed certainly and easily, and lightly moreover, damping force big moreover is acquired, and maintenance of the keeping force can be ensured over a long period of time, and the configuration is easy, and fabrication assembly is easy.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] In the above-mentioned conventional trimming devices, although the thing using a ratchet mechanism is convenient for eye winding up of torsion spring, rewinding of it is impossible and it cannot adjust a torque. Although either eye winding up of torsion spring or rewinding can do the thing using a brake spring, torsion spring is automatically rewound by reduction of the damping force by the uncertainty of the damping force of the brake spring, or weakening of a brake spring, as a result it becomes impossible to use it, and actuation of eye winding up of torsion spring or rewinding cannot be performed lightly because of a brake spring, it is heavy and the assembly of a brake spring is not still easier.

[0004] This invention can perform certainly and easily, and lightly moreover adjustment of the keeping force of the keeping means for the apertures of vertical movement, damping force big moreover is acquired, and it can ensure maintenance of the keeping force over a long period of time, and is simple for the configuration, and tends to offer trimming devices with easy fabrication assembly.

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**MEANS**

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[Means for Solving the Problem] A keeping means to have the torsion spring mutually hung with an aperture shoji in order that this invention may attain the above-mentioned object, The sliding object to which an aperture shoji is connected with this keeping means, and it shows this aperture shoji up and down along with the door post of a sash, A means for it to be included in this sliding inside of the body, and to adjust the keeping force of torsion spring is provided. The adjustment shaft for the keeping force of torsion spring in the above-mentioned adjustment means, The cam side the lining puck for these adjustment shafts and for actuation of this damping force and the attachment component which always becomes unable to give the turning effort to the braking direction while holding the above-mentioned lining puck are included.

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EXAMPLE

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[Example] It explains concretely, referring to a drawing per example of this invention below.

[0007] An aperture shoji (1) moves up and down along with the guide rail (3) and ( drawing 4 ) of a door post (2) of a sash. This aperture shoji (1) is hung by the door post (2) in the state of keeping by the keeping member (4) used as a keeping means, and ( drawing 1 ), and stands it still in the location of arbitration.

[0008] The cylinder by which a keeping member (4) is prolonged in the vertical direction, and an upper bed is connected with a door post (2) by the pin (5) and ( drawing 1 ) (6), The nut (7) with which only the revolution was connected with the soffit of this cylinder possible, and the spiral lever which it is inserted possible [ vertical movement ] into the above-mentioned cylinder, and the soffit penetrates a nut (7) in the state of screwing, and projects from the soffit of a cylinder (6) to the method of outside (8), The torsion spring (9) around which the spiral lever (8) was looped within the above-mentioned cylinder (6) was provided, the upper bed of torsion spring (9) fixed to the upper bed of a cylinder (6) (not shown), and the soffit of torsion spring has fixed in the nut (7). A spiral lever (8) rotates a nut (7) by the drop, and rolls and fastens torsion spring (9), and torsion spring (9) reverses a nut (7) by the rewinding, and it commits it so that a spiral lever (8) may be raised. A spiral lever (8) is connected with a shoji (1), and if the torque which balances with torsion spring (9) in a shoji (1) and its maximum climb location is given, torsion spring (9) can always be mutually hung with a shoji, can make a shoji able to stand it still in the location of arbitration, and, moreover, can make a shoji go up and down by the small force.

[0009] Mostly, the sliding inside of the body (10) is mainly constituted from a tubed part (12) formed in one by the part (11) and this part of a rectangular parallelepiped, and is included in them possible [ sliding in the guide rail (3) of the door post (2) of a sash ].

[0010] A rectangular parallelepiped part (11) has the sliding slot (13) of the vertical direction of the both sides, fits into the flange (14) which this sliding slot expects to the effective area of the guide rail (3) of a door post (2), and ( drawing 4 ) possible [ sliding ], and moves a sliding object (10) up and down along with a guide rail (3). The rectangular parallelepiped part (11) is connected so that it has a lateral bearing hole (15) and lateral ( drawing 5 ) in the lower part, and fitting of the revolution of a revolving shaft (16) may be made free into this bearing hole (15), fitting of the connection arm (18) may be carried out to the communicating pore (17) of this revolving shaft and a connection arm (18) and a revolving shaft (16) may be rotated in one. It incorporates and fixes ranging from the soffit to a kicking rail (20) of the stile (19) of a shoji (1), and a connection arm (18) makes a shoji a center of rotation, and a revolving shaft (16) is tilted to an interior-of-a-room side from a vertical position to a horizontal position in it. By the tilting, the lateral surface of the glass (21) of a shoji (1) can be cleaned safely [ in an interior-of-a-room side ] and easily.

[0011] It has an amplification hole (23) and ( drawing 5 ). the bearing hole (22) and this bearing hole which penetrated a part for a tubed part (12) in the vertical direction -- reams -- While the adjustment shaft (24) used as an adjustment means for torsion spring (9) in this bearing hole and an amplification hole is inserted pivotable and the shank (25) of the upper bed projects from a part for a tubed part (12) to the upper part, a part of shank (26) of a soffit has projected under [ for a tubed part (12) ]. A shank (27) to the shank (25) of the upper bed to which an adjustment shaft (24) fits into the bearing hole (22) for a tubed part (12) is the same diameter, and the downward shank (26) is formed in the bigger diameter than a bearing hole (22) and a shank (27) from the bearing hole (22) ( drawing 5 R> 5). An adjustment shaft (24) can only rotate the configuration and the interval which an adjustment shaft (24) is inserted from a lower part into a bearing hole (22), and the circular sulcus (29) of the adjustment shaft (24) corresponding to the location of the upper bed peristome (28) of a bearing hole (22) is made to carry out fitting of the lock ring (30), prevent migration in the lower part of an adjustment shaft (24), and prevent the migration to the below-mentioned upper part. It has a slot (31) in that upper bed, the soffit of a

hook (32) is inserted in this slot (31), and the adjustment shaft (24) of each other is connected with the hole (34) of a hook (32), and the hole (35) of an adjustment shaft (24) through a lock pin (33). This hook (32) is connected with the spiral lever (8) by the pin (36) and the pin (37). Thereby, while an adjustment shaft (24) is hung by the spiral lever (8), a sliding object (10) is hung, a sliding object (10) supports a shoji (1) through a revolving shaft (16) and a connection arm (18), and the shoji (1) is lifted by the keeping member (4).

[0012] The adjustment means of the torque of the torsion spring (9) of a keeping member (4) possesses the lining puck (38) which gives damping force to the adjustment shaft other than the above-mentioned adjustment shaft (24), and the cam side (39) which forces this lining puck on an adjustment shaft and the attachment component (40) which moves a lining puck in the braking direction and the discharge direction while holding the above-mentioned lining puck. A lining puck (38) is a cylinder koro-like thing, and it is arranged at two-piece regular intervals so that the surroundings of an adjustment shaft (24) may be surrounded. The cam side (39) is formed in two-piece regular intervals so that it may correspond to the inner skin of the amplification hole (23) of a sliding object (10) at a lining puck (38). This cam side (39) is formed in the arc to which a radius becomes large as it goes to a hoop direction. The attachment component (40) had the tubed part (41), and this tubed part (41) has fitted into the amplification hole (23) of the limb (26) of an adjustment shaft (24), and a sliding object (10). While the upper bed of a tubed part (41) engages with the step (42) of a bearing hole (22), the soffit engaged with the flange (43) of an adjustment shaft (24), and has prevented the migration to the upper part of an adjustment shaft. a tubed part (41) — that peripheral wall — a breakthrough (44) — having — this hole — the lining puck (38) of the tubed koro is inserted inside. An attachment component (40) has the lever (45) radially prolonged from a tubed part (41), and this lever (45) is rocked between two stoppers (46) of the base of a sliding object (10), and (47). When the lever (45) has bumped into the stopper (47), a lining puck (38) takes the deepest location of a cam side (39), and is in a neutral condition, and it is not pushed against an adjustment shaft (24), but an adjustment shaft is in the condition of not braking. If a lever (45) is rotated until it bumps into other stoppers (46) in the direction of an arrow head (A), a lining puck (38) will be pushed in respect of a cam (39), and will give damping force to an adjustment shaft (24). Fitting was carried out to the tubed part (41) of an attachment component (40), the end was hooked on the attachment component side, the other end was hooked on the sliding object side, and the volume spring (49) has always given the turning effort to the direction braked to an attachment component (40), and holds the braking condition of an adjustment shaft (24).

[0013] An adjustment shaft (24) has a slotted hole (50) in that soffit side, inserts the edge of a blade of a driver in this slotted hole, and rotates. If the torque of torsion spring will increase if the damping force over this shaft is made in the condition of being canceled by actuation (the direction of arrow-head A) of a lever (45) and turns an adjustment shaft (24) in the direction of an arrow head (A), and a revolution of an adjustment shaft (24) turns clockwise, a torque will decrease. In addition, it is also made that rewinding [ of torsion spring (9) ] cancels the damping force over an adjustment shaft (24). Thus, the torque of torsion spring (9) is adjusted so that it may balance with a shoji proper.

[0014] A locking means is formed in the top rail (51), and a shoji (1) prevents that a shoji rotates to the circumference of a revolving shaft (16) by locking of this means, and permits a revolution of a shoji in release. The locking member (52) as this locking means possesses the locking rod (54) inserted possible [ sliding in a case (53) and this case ], and the locking rod (54) is always energized in the locking direction by means of a spring (not shown). The apical surface is formed in an arc and, as for a locking rod (54), it has a tongue (55) further. The apical surface of a locking rod (54) fits into a cylinder (6), and moves up and down with a shoji (1) by making the cylinder into a slideway. This locking rod (54) is pinched by the door post of a sash, and prevents tilting of a shoji (1). If a locking rod (54) is retreated in a lead-in location with a tongue (55), a locking rod (54) will move outside from an engagement location with the door post (2) of a sash, will be in a release condition, and will enable tilting of a shoji (1).

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the front view showing a mounting beam condition for the trimming devices of this invention in the aperture.

[Drawing 2] It is the front view of the trimming devices of this invention.

[Drawing 3] It is the right side view of the above-mentioned trimming devices.

[Drawing 4] It is the bottom view of the above-mentioned trimming devices.

[Drawing 5] It is the V-V line sectional view of drawing 4 .

[Drawing 6] It is the VI-VI line sectional view of drawing 5 .

[Description of Notations]

1 Shoji

4 Keeping Member

6 Cylinder

7 Nut

8 Spiral Lever

9 Torsion Spring

10 Sliding Object

16 Revolving Shaft

18 Connection Arm

22 Bearing Hole

24 Adjustment Shaft

32 Hook

38 Lining Puck

39 Cam Side

40 Attachment Component

49 Volume Spring

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[Translation done.]

\* NOTICES \*

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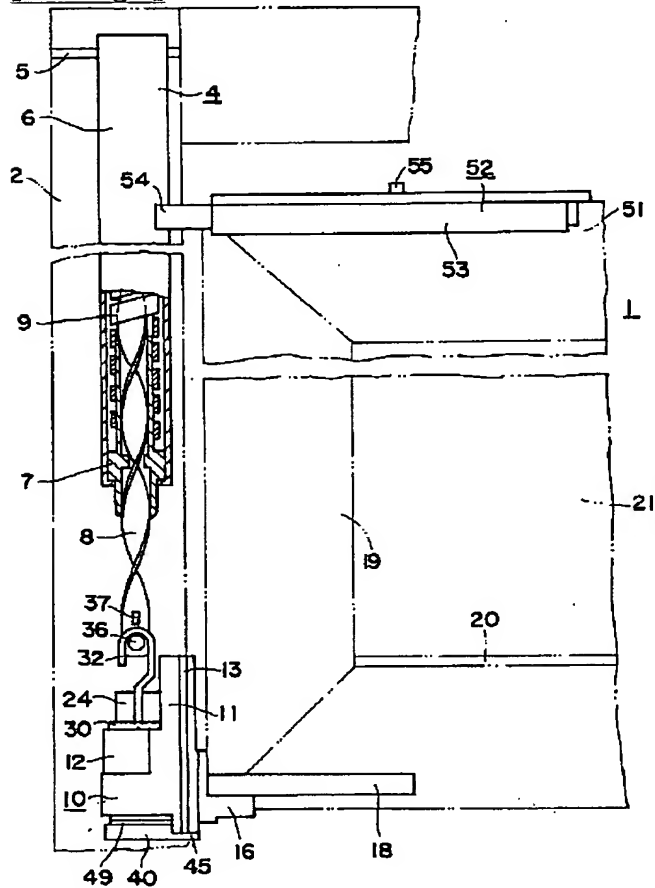
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- 2.\*\*\*\* shows the word which can not be translated.
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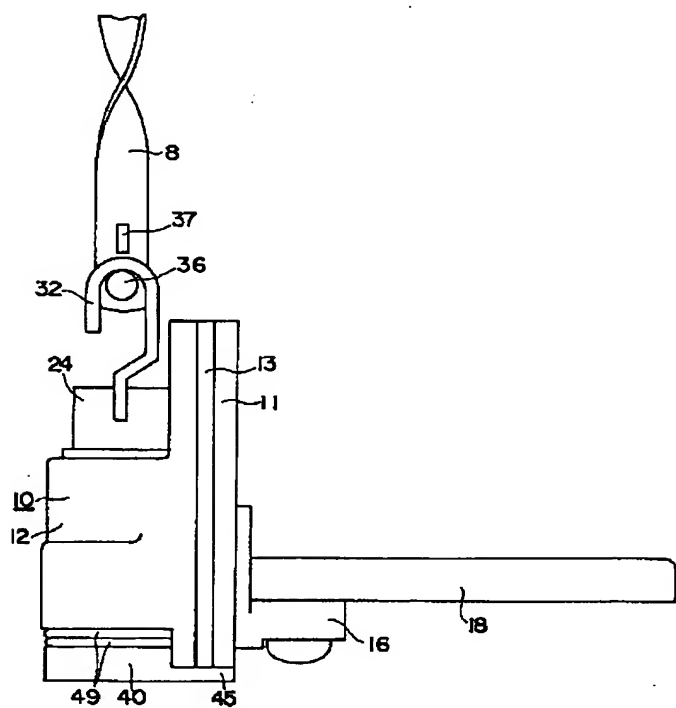
DRAWINGS

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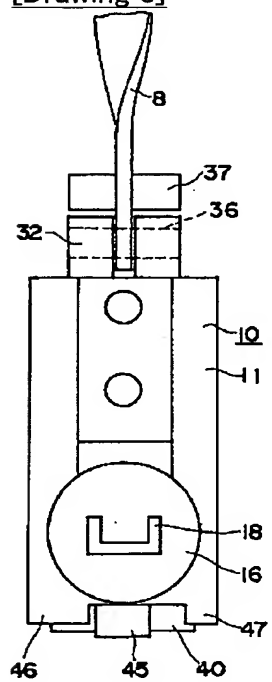
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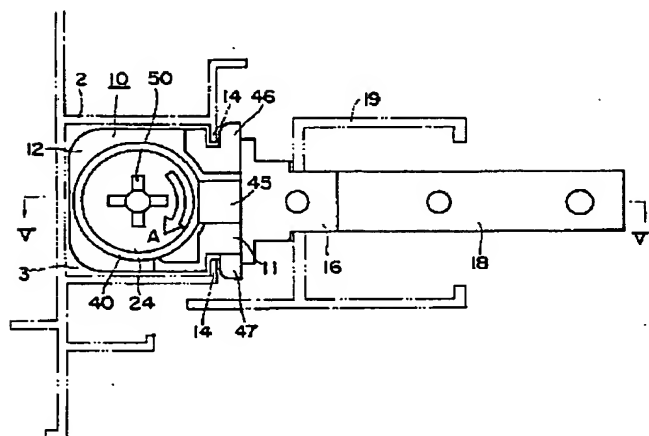
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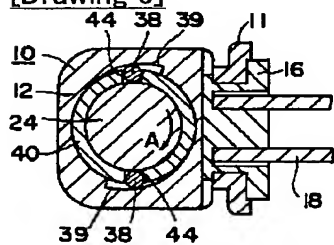
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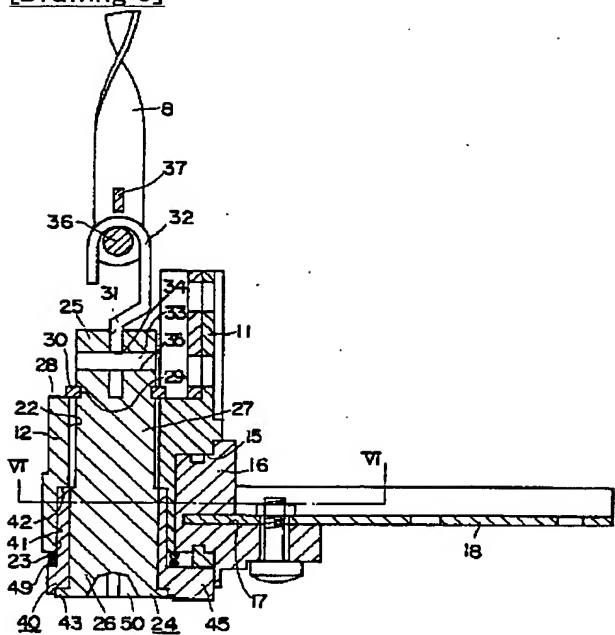
[Drawing 4]



[Drawing 6]



[Drawing 5]



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(71) 出願人 000150316

株式会社中西エンジニアリング

東京都千代田区神田佐久間町3丁目37番38号

(72) 発明者 中 西 好 一

東京都千代田区神田和泉町1番地11

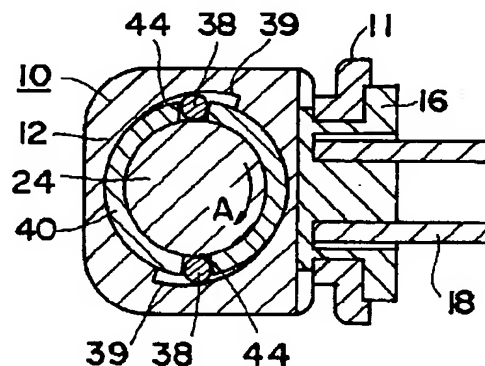
(74) 代理人 弁理士 井上 清子 (外1名)

(54) 【発明の名称】 上下動窓の釣合装置

(57) 【要約】 (修正有)

【目的】 上下動窓の釣合装置における釣合力の調整が確実に容易でしかも軽快にでき、しかも大きな制動力が得られて釣合力の保持を長期間にわたって確実にすることができ、またその構成が簡単で製作組立を容易にしようとするものである。

【構成】 上下動窓の釣合装置において、ねじりばねの釣合力を調整する調整軸24に対する制動力を、調整軸まわりの制動片38と、この制動片38を調整軸に押しつけるカム面39と、制動片38を保持して常時制動方向への回転力を与えられた保持部材40で得る。





## 【特許請求の範囲】

【請求項1】 窓障子と釣り合って該窓障子を任意の位置に静止させるねじりばねを有する釣合手段、該釣合手段に窓障子を連結し該窓障子を窓枠の縦枠に沿って上下に案内する摺動体、該摺動体内に組み込まれてねじりばねの釣合力を調整する手段を具備し、上記調整手段は、ねじりばねをねじって釣合力を調整する軸、該調整軸を制動して釣合力を保持する制動片、該制動片をその両方向の回転にて調整軸に制動のために押しつけたり調整軸から制動解除のために離したりさせるカム面、上記制動片を保持すると共にその制動方向への回転力常時与えられている保持部材を有する上下動窓の釣合装置。

【請求項2】 前記調整軸は摺動体の縦方向の軸受孔内に回転可能に挿入され、前記カム面は上記軸受孔に形成され、前記制動片は調整軸とカム面との間に挿入されかつ調整軸に回転可能に嵌合された筒状の保持部材の孔で保持され、該保持部材にそれを解除方向に回転されるレバーが設けられ、さらに保持部材を制動方向に常時付勢させるばねを含む請求項1記載の上下動窓の釣合装置。

【請求項3】 前記制動片は複数で調整軸を囲むように配置され、前記カム面も各制動片に対応するように複数個設けられた請求項2記載の上下動窓の釣合装置。

【請求項4】 前記摺動体の軸受孔のカム面は周方向に進むに従い半径が大きくなる弧状に形成された請求項3記載の上下動窓の釣合装置

【請求項5】 前記釣合手段はさらに窓枠の縦枠に固定されかつ前記ねじりばねを囲みそのばねの上端と固着された筒と、該筒に回転のみ可能に連結されかつねじりばねの下端に固着したナットと、ねじりばね内に上下動可能に挿入されて上記ナットと等螺合しかつ調整軸に一体的に回転可能に連結された螺線杆を具備し、該螺線杆はその下降時にナットを介してねじりばねを巻き締め、ねじりばねの巻き戻しにてナットを介して上昇される請求項4記載の上下動窓の釣合装置。

【請求項6】 前記制動片は円筒コロ状に形成された請求項1から請求項5までのいずれかに記載の上下動窓の釣合装置。

【請求項7】 前記螺線杆と調節軸の連結は、調節軸に連結されたフックと螺線杆に結合されたピンとの係合にてなされる請求項1から請求項6までのいずれかに記載の上下動窓の釣合装置。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】 本発明は上下動窓の釣合装置に関するものである。

## 【0002】

【従来の技術】 上下動窓の釣合装置において、ねじりばねのねじり力を窓障子との釣合いに利用したものが知られていて、そのねじり力の調整に調整軸をラチェット機構で一方方向に回転させるようにしたものや、調整軸にコ

イル状のブレーキばねの緊縛力による制動力を与えるようにしたものがある。

## 【0003】

【発明が解決しようとする課題】 上記従来の釣合装置において、ラチェット機構を利用したものはねじりばねの巻締めには便利であるが巻戻しができずねじり力を調整できない。ブレーキばねを利用したものはねじりばねの巻締めと巻戻しのいずれでもできるが、そのブレーキばねの制動力の不確実性やブレーキばねの弱化による制動力の減少にてねじりばねが自然に巻戻され、ひいては使用できなくなり、またねじりばねの巻締めや巻戻しの操作がブレーキばねのために軽快にできず重く、さらにはブレーキばねの組立が容易でない。

【0004】 本発明は上下動の窓用の釣合手段の釣合力の調整が確実かつ容易でしかも軽快にでき、しかも大きな制動力が得られて釣合力の保持を長期間にわたって確実にすることができ、またその構成が簡単で製作組立が容易な釣合装置を提供しようとするものである。

## 【0005】

【課題を解決するための手段】 本発明は上記目的を達成するために、窓障子と吊り合うねじりばねを有する釣合手段と、該釣合手段に窓障子を連結して該窓障子を窓枠の縦枠に沿って上下に案内する摺動体と、該摺動体内に組み込まれてねじりばねの釣合力を調整する手段を具備し、上記調整手段はねじりばねの釣合力用の調整軸と、該調整軸用の制動片と、該制動力の動作のカム面と、上記制動片を保持すると共にその制動方向への回転力を常時与えられてなる保持部材を含んでいる。

## 【0006】

【実施例】 以下本発明の実施例につき図面を参照しながら具体的に説明する。

【0007】 窓障子(1)は窓枠の縦枠(2)の案内溝(3)(図4)に沿って上下動する。この窓障子(1)は釣合手段として使用される釣合部材(4)(図1)で釣合状態にて縦枠(2)に吊り下げられて任意の位置に静止される。

【0008】 釣合部材(4)は上下方向に延びて上端が縦枠(2)にピン(5)(図1)で連結される筒(6)と、該筒の下端に回転のみ可能に連結されたナット(7)と、上記筒内に上下動可能に挿入されてその下端がナット(7)を螺合状態にて貫通して筒(6)の下端から外方に突き出る螺線杆(8)と、上記筒(6)内にて螺線杆(8)に巻装されたねじりばね(9)を具備し、ねじりばね(9)の上端は筒(6)の上端に固着され(図示せず)、ねじりばねの下端はナット(7)に固着されている。螺線杆(8)はその降下にてナット(7)を回転させてねじりばね(9)を巻き締め、ねじりばね(9)はその巻き戻しにてナット(7)を逆転させて螺線杆(8)を上昇させるように働く。螺線杆(8)を障子(1)に連結して、ねじりばね(9)に障

子(1)とその最大上昇位置にて釣り合うねじり力を与えておくと、ねじりばね(9)は障子と常に吊り合っ  
て障子を任意の位置に静止させることができ、しかも障子  
を小さな力で上下させることができる。

【0009】摺動体内(10)はほぼ直方体の部分(11)と該  
部分に一体に形成された筒状の部分(12)で主として構成  
されていて、窓枠の縦枠(2)の案内溝(3)内に摺動  
可能に組み込まれている。

【0010】直方体部分(11)はその両側の上下方向の摺  
動溝(13)を有し、該摺動溝が縦枠(2)の案内溝(3) 10  
の開口面にのぞむフランジ(14)(図4)に摺動可能に嵌  
合して摺動体(10)を案内溝(3)に沿って上下動させ  
る。直方体部分(11)はその下方に横方向の軸受孔(15)  
(図5)を有し、該軸受孔(15)内に回転軸(16)が回転自  
在に嵌合され、該回転軸の連結孔(17)に連結腕(18)を嵌  
合させて連結腕(18)と回転軸(16)を一体的に回転するよ  
うに連結している。連結腕(18)は障子(1)の縦枠(19)  
の下端から下枠(20)にわたって組み込んで固着され、障  
子を回転軸(16)を回転中心として室内側に垂直位置から 20  
のガラス(21)の外側面を室内側にて安全かつ容易に掃除  
することができる。

【0011】筒状部分(12)はその上下方向に貫通した軸  
受孔(22)と該軸受孔に連なる拡大孔(23)(図5)を有  
し、該軸受孔と拡大孔内にねじりばね(9)用の調整手  
段として使用される調整軸(24)が回転可能に挿入され、  
その上端の軸部(25)が筒状部分(12)から上方に突き出  
ると共に、下端の軸部(26)の一部が筒状部分(12)の下方  
に突き出ている。調整軸(24)は筒状部分(12)の軸受孔(22)  
に嵌合する軸部(27)からその上端の軸部(25)までは同一 30  
直径であり、軸受孔(22)から下方の軸部(26)は軸受孔(2  
2)と軸部(27)より大きな直径に形成されている(図  
5)。調整軸(24)は軸受孔(22)内に下方から挿入され  
て、軸受孔(22)の上端口縁(28)の位置に対応する調整軸  
(24)の環状溝(29)に止輪(30)を嵌合させて調整軸(24)の  
下方への移動を阻止し、後述の上方への移動を阻止する  
構成とあいて、調整軸(24)は回転のみが可能であ  
る。調整軸(24)はその上端に溝(31)を有し、この溝(31)  
にフック(32)の下端が挿入されて、止ピン(33)をフッ  
ク(32)の孔(34)と調整軸(24)の孔(35)に通して互いに 40  
連結する。このフック(32)は螺線杆(8)にピン(36)と  
ピン(37)で連結されている。これにより調整軸(24)は螺  
線杆(8)に吊り下げられると共に摺動体(10)を吊り下  
げ、摺動体(10)が回転軸(16)と連結腕(18)を介して障子  
(1)を支え、障子(1)が釣合部材(4)にて吊り上  
げられている。

【0012】釣合部材(4)のねじりばね(9)のねじ  
り力の調整手段は、上記調整軸(24)のほかはその調整軸  
に制動力を与える制動片(38)と、該制動片を調整軸に押  
しつけるカム面(39)と、上記制動片を保持すると共に制 50

動片を制動方向と解除方向に移動させる保持部材(40)を  
具備している。制動片(38)は円柱コロ状のもので調整軸  
(24)のまわりをかこむように2個等間隔に配置されてい  
る。カム面(39)は摺動体(10)の拡大孔(23)の内周面に制  
動片(38)に対応するように2個等間隔に形成されてい  
る。このカム面(39)は周方向に進むに従い半径が大き  
くなる弧状に形成されている。保持部材(40)は筒状部(41)  
を有し、この筒状部(41)が調整軸(24)の拡大部(26)と  
摺動体(10)の拡大孔(23)に嵌合している。筒状部(41)の  
上端は軸受孔(22)の段部(42)に係合すると共に下端は調  
整軸(24)のフランジ(43)に係合して、調整軸の上方への  
移動を阻止している。筒状部(41)はその周壁に貫通孔(4  
4)を有し、この孔内に筒状コロの制動片(38)が挿入され  
ている。保持部材(40)は筒状部(41)から半径方向に延び  
るレバー(45)を有し、該レバー(45)は摺動体(10)の底面  
の2個のストッパー(46)、(47)間に揺動される。レバ  
ー(45)がストッパー(47)に突き当たっているときは、制  
動片(38)はカム面(39)の最も深い位置を取って中立状態  
にあり、調整軸(24)に押しつけられず、調整軸は非制動  
状態である。レバー(45)を矢印(A)方向に他のストッ  
パー(46)に突き当たるまで回転させると、制動片(38)  
はカム面(39)で押されて調整軸(24)に制動力を与える。  
巻きばね(49)は保持部材(40)の筒状部(41)に嵌合され  
て、その一端が保持部材側に引掛けられ、他端が摺動体  
側に引掛けられて、保持部材(40)に制動する方向への回  
転力を常時与えていて、調整軸(24)の制動状態を保持し  
ている。

【0013】調整軸(24)はその下端面に溝孔(50)を有  
し、この溝孔にドライバーの刃先を差し込んで回転され  
る。調整軸(24)の回転は、該軸に対する制動力がレバー  
(45)の操作(矢印A方向)にて解除されている状態にて  
なされ、調整軸(24)を矢印(A)方向にまわせばねじり  
ばねのねじり力が増大し、時計方向にまわせばねじり力  
が減少される。なお、ねじりばね(9)の巻き戻しは調  
整軸(24)に対する制動力を解除するだけでもなされる。  
このようにしてねじりばね(9)のねじり力は障子と適  
正に釣り合うように調整される。

【0014】障子(1)はその上枠(51)に施錠手段が設  
けられ、該手段の施錠にて障子が回転軸(16)まわりに  
回転するのを阻止し、解錠にて障子の回転を許容する。  
この施錠手段としての施錠部材(52)はケース(53)と、該  
ケース内に摺動可能に挿入された錠杆(54)を具備し、錠  
杆(54)は施錠方向に常時ばね(図示せず)で付勢されて  
いる。錠杆(54)はその先端面が弧状に形成され、さら  
につまみ(55)を有する。錠杆(54)の先端面は筒(6)に  
嵌合してその筒を案内面として障子(1)と共に上下動  
する。この錠杆(54)は窓枠の縦枠で挟まれて、障子  
(1)の傾動を阻止する。つまみ(55)で錠杆(54)を引込  
位置に後退させると、錠杆(54)は窓枠の縦枠(2)との  
かみ合い位置から外側に移動し、解錠状態となって、障

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子(1)の傾動を可能にさせる。

【0015】

【発明の効果】本発明は窓障子と釣り合うねじりばね(9)のねじり力を調整する手段として、ねじりばねを回転させる調整軸(24)に制動片(38)をカム面(39)で押しつけて制動力を与えたり、その制動片の押しつけをカム面で解除可能にし、上記制動片を保持部材(40)で保持し、該保持部材に制動方向の回転力を常時与えて制動状態にし、逆転させることにより制動解除状態にするように構成されているので、上下動の窓用の釣合手段の釣合力の調整が確実かつ容易でしかも軽快にでき、しかも大きな制動力が得られて釣合力の保持を長期間にわたって確実にすることができ、またその構成が簡単で製作組立が容易である。

【図面の簡単な説明】

【図1】本発明の釣合装置を窓に取付けた状態を示す正面図である。

【図2】本発明の釣合装置の正面図である。

【図3】上記釣合装置の右側面図である。

【図4】上記釣合装置の底面図である。

【図5】図4のV-V線断面図である。

【図6】図5のVI-VI線断面図である。

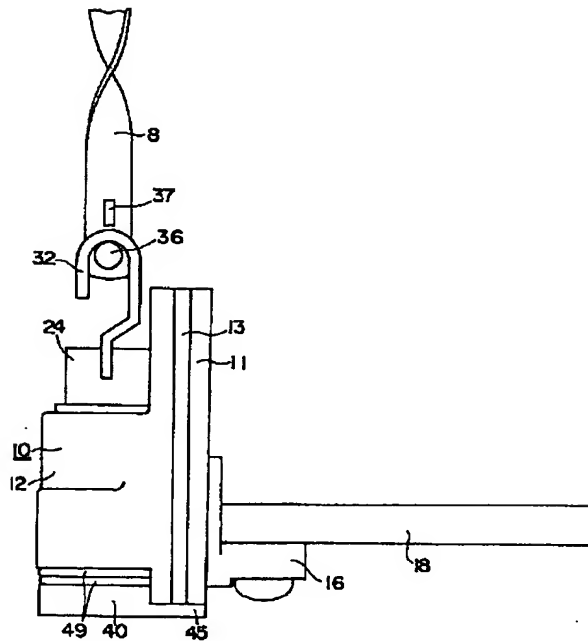
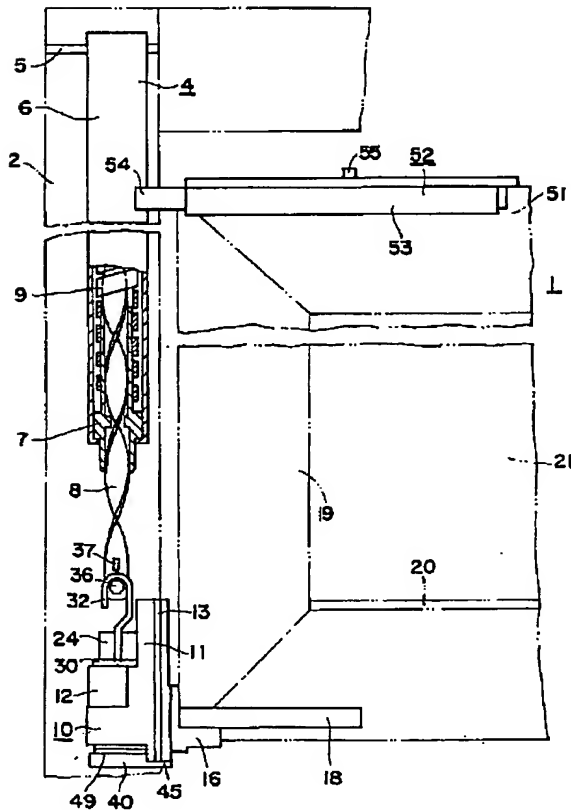
【符号の説明】

- |    |       |
|----|-------|
| 1  | 障子    |
| 4  | 釣合部材  |
| 6  | 筒     |
| 7  | ナット   |
| 8  | 螺線杆   |
| 9  | ねじりばね |
| 10 | 摺動体   |
| 16 | 回転軸   |
| 18 | 連結腕   |
| 22 | 軸受孔   |
| 24 | 調整軸   |
| 32 | フック   |
| 38 | 制動片   |
| 39 | カム面   |
| 40 | 保持部材  |
| 49 | 巻きばね  |

20

【図1】

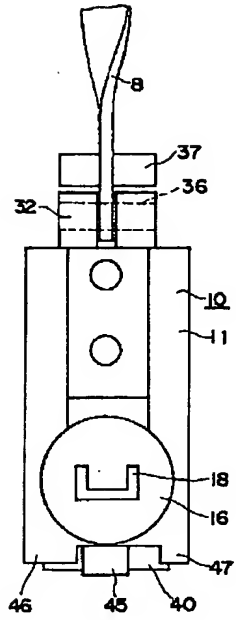
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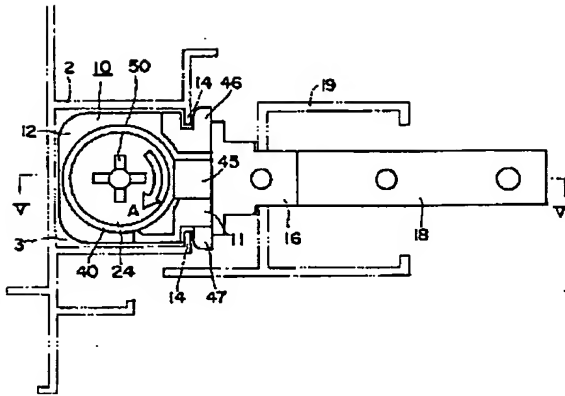
(5)

特開平4-238984

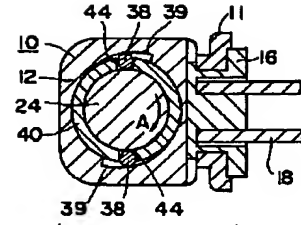
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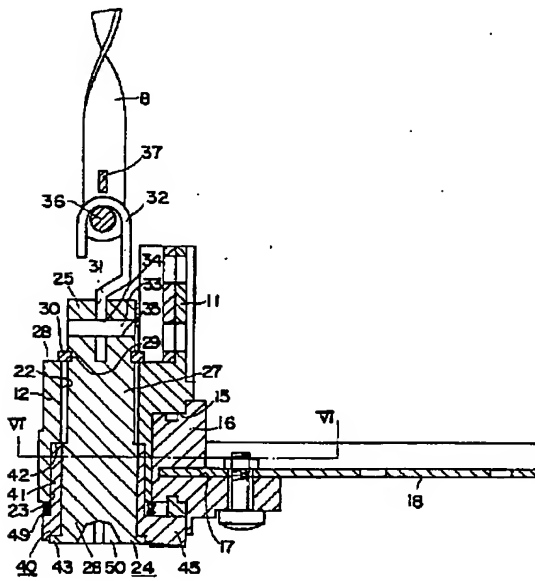
【図4】



【図6】



【図5】



# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : NAKANISHI ENG:KK

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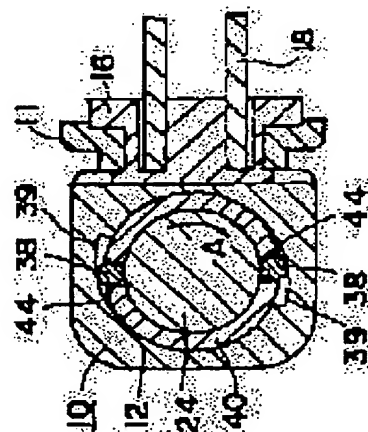
(72)Inventor : NAKANISHI KOICHI

## (54) BALANCER OF UP-AND-DOWN MOTION WINDOW

### (57)Abstract:

**PURPOSE:** To make sure, easy and light the adjustment of balancing force in a balancer of an up-and-down motion window, to obtain stronger damping force to make sure the maintaining of balancing force over a long period of time and to simplify the constitution of the balancer to make it easy to manufacture and assemble it.

**CONSTITUTION:** In a balancer of an up-and-down motion window, damping force against an adjusting shaft 24 adjusting balancing force of a twisted spring is obtained by braking pieces 39 around the adjusting shaft, cam faces 39 pressing the braking pieces 38 against the adjusting shaft and a holding member 40 holding the damping force and having always turning effort in the braking direction.



## LEGAL STATUS

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[Date of final disposal for application]

[Patent number]

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(71) 出願人 000150316

株式会社中西エンジニアリング

東京都千代田区神田佐久間町 3 丁目 37 番 38 号

(72) 発明者 中 西 好 一

東京都千代田区神田和泉町 1 番地 11

(74) 代理人 弁理士 井上 清子 (外 1 名)

審査官 木原 裕

(54) 【発明の名称】 上下動窓の釣合装置

1

【特許請求の範囲】

【請求項 1】 窓障子と釣り合って該窓障子を任意の位置に静止させるねじりばねを有する釣合手段、該釣合手段に窓障子を連結し該窓障子を窓枠の縦枠に沿って上下に案内する摺動体、該摺動体内に組み込まれてねじりばねの釣合力を調整する手段を具備し、上記調整手段は、ねじりばねをねじって釣合力を調整する軸、該調整軸を制動して釣合力を保持する制動片、該制動片をその両方向の回転にて調整軸に制動のために押しつけたり調整軸から制動解除のために離したりさせるカム面、上記制動片を保持すると共にその制動方向への回転力常時与えられている保持部材を有する上下動窓の釣合装置。

【請求項 2】 前記調整軸は摺動体の縦方向の軸受孔内に回転可能に挿入され、前記カム面は上記軸受孔に形成され、前記制動片は調整軸とカム面との間に挿入されか

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つ調整軸に回転可能に嵌合された筒状の保持部材の孔で保持され、該保持部材にそれを解除方向に回転されるレバーが設けられ、さらに保持部材を制動方向に常時付勢させるばねを含む請求項 1 記載の上下動窓の釣合装置。

【請求項 3】 前記制動片は複数で調整軸を囲むように配置され、前記カム面も各制動片に対応するように複数個設けられた請求項 2 記載の上下動窓の釣合装置。

【請求項 4】 前記摺動体の軸受孔のカム面は周方向に進むに従い半径が大きくなる弧状に形成された請求項 3 記載の上下動窓の釣合装置

【請求項 5】 前記釣合手段はさらに窓枠の縦枠に固定されかつ前記ねじりばねを囲みそのばねの上端と固着された筒と、該筒に回転のみ可能に連結されかつねじりばねの下端に固着したナットと、ねじりばね内に上下動可能に挿入されて上記ナットと等螺合しかつ調整軸に一体

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的に回転可能に連結された螺線杆を具備し、該螺線杆はその下降時にナットを介してねじりばねを巻き締め、ねじりばねの巻き戻しにてナットを介して上昇される請求項4記載の上下動窓の釣合装置。

【請求項6】 前記制動片は円筒コ口状に形成された請求項1から請求項5までのいずれかに記載の上下動窓の釣合装置。

【請求項7】 前記螺線杆と調節軸の連結は、調節軸に連結されたフックと螺線杆に結合されたピンとの係合にてなされる請求項1から請求項6までのいずれかに記載の上下動窓の釣合装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は上下動窓の釣合装置に関するものである。

【0002】

【従来の技術】上下動窓の釣合装置において、ねじりばねのねじり力を窓障子との釣合いに利用したものが知られていて、そのねじり力の調整に調整軸をラチェット機構で一方に回転させるようにしたものや、調整軸にコイル状のブレーキばねの緊縛力による制動力を与えるようにしたものがある。

【0003】

【発明が解決しようとする課題】上記従来の釣合装置において、ラチェット機構を利用したものはねじりばねの巻締めには便利であるが巻戻しができずねじり力を調整できない。ブレーキばねを利用したものはねじりばねの巻締めと巻戻しのいずれでもできるが、そのブレーキばねの制動力の不確実性やブレーキばねの弱化による制動力の減少にてねじりばねが自然に巻戻され、ひいては使用できなくなり、またねじりばねの巻締めや巻戻しの操作がブレーキばねのために軽快にできず重く、さらにはブレーキばねの組立が容易でない。

【0004】本発明は上下動の窓用の釣合手段の釣合力の調整が確実かつ容易でしかも軽快にでき、しかも大きな制動力が得られて釣合力の保持を長期間にわたって確実にすることができ、またその構成が簡単で製作組立が容易な釣合装置を提供しようとするものである。

【0005】

【課題を解決するための手段】本発明は上記目的を達成するために、窓障子と吊り合うねじりばねを有する釣合手段と、該釣合手段に窓障子を連結して該窓障子を窓枠の縦枠に沿って上下に案内する摺動体と、該摺動体内に組み込まれてねじりばねの釣合力を調整する手段を具備し、上記調整手段はねじりばねの釣合力用の調整軸と、該調整軸用の制動片と、該制動力の動作用のカム面と、上記制動片を保持すると共にその制動方向への回転力を常時与えられてなる保持部材を含んでいる。

【0006】

【実施例】以下本発明の実施例につき図面を参照しながら

ら具体的に説明する。

【0007】窓障子(1)は窓枠の縦枠(2)の案内溝(3)(図4)に沿って上下動する。この窓障子(1)は釣合手段として使用される釣合部材(4)(図1)で釣合状態にて縦枠(2)に吊り下げられて任意の位置に静止される。

【0008】釣合部材(4)は上下方向に延びて上端が縦枠(2)にピン(5)(図1)で連結される筒(6)と、該筒の下端に回転のみ可能に連結されたナット

(7)と、上記筒内に上下動可能に挿入されてその下端がナット(7)を螺合状態にて貫通して筒(6)の下端から外方に突き出る螺線杆(8)と、上記筒(6)内にて螺線杆(8)に巻装されたねじりばね(9)を具備し、ねじりばね(9)の上端は筒(6)の上端に固着され(図示せず)、ねじりばねの下端はナット(7)に固着されている。螺線杆(8)はその降下にてナット(7)を回転させてねじりばね(9)を巻き締め、ねじりばね(9)はその巻き戻しにてナット(7)を逆転させて螺線杆(8)を上昇させるように働く。螺線杆(8)を障子(1)に連結して、ねじりばね(9)に障子(1)とその最大上昇位置にて釣り合うねじり力を与えておくと、ねじりばね(9)は障子と常に吊り合って障子を任意の位置に静止させることができ、しかも障子を小さな力で上下させることができる。

【0009】摺動体内(10)はほぼ直方体の部分(11)と該部分に一体に形成された筒状の部分(12)で主として構成されていて、窓枠の縦枠(2)の案内溝(3)内に摺動可能に組み込まれている。

【0010】直方体部分(11)はその両側の上下方向の摺動溝(13)を有し、該摺動溝が縦枠(2)の案内溝(3)の開口面にのぞむフランジ(14)(図4)に摺動可能に嵌合して摺動体(10)を案内溝(3)に沿って上下動させる。直方体部分(11)はその下方に横方向の軸受孔(15)(図5)を有し、該軸受孔(15)内に回転軸(16)が回転自在に嵌合され、該回転軸の連結孔(17)に連結腕(18)を嵌合させて連結腕(18)と回転軸(16)を一体的に回転するように連結している。連結腕(18)は障子(1)の縦枠(19)の下端から下枠(20)にわたって組み込んで固着され、障子を回転軸(16)を回転中心として室内側に垂直位置から水平位置まで傾動される。その傾動により、障子(1)のガラス(21)の外側面を室内側にて安全かつ容易に掃除することができる。

【0011】筒状部分(12)はその上下方向に貫通した軸受孔(22)と該軸受孔に連なる拡大孔(23)(図5)を有し、該軸受孔と拡大孔内にねじりばね(9)用の調整手段として使用される調整軸(24)が回転可能に挿入され、その上端の軸部(25)が筒状部分(12)から上方に突き出ると共に、下端の軸部(26)の一部が筒状部分(12)の下方に突き出ている。調整軸(24)は筒状部分(12)の軸受孔(22)に嵌合する軸部(27)からその上端の軸部(25)までは同一

直径であり、軸受孔(22)から下方の軸部(26)は軸受孔(22)と軸部(27)より大きな直径に形成されている(図5)。調整軸(24)は軸受孔(22)内に下方から挿入されて、軸受孔(22)の上端口縁(28)の位置に対応する調整軸(24)の環状溝(29)に止輪(30)を嵌合させて調整軸(24)の下方への移動を阻止し、後述の上方への移動を阻止する構成とあいまって、調整軸(24)は回転のみが可能である。調整軸(24)はその上端に溝(31)を有し、この溝(31)にフック(32)の下端が挿入されて、止ピン(33)をフック(32)の孔(34)と調整軸(24)の孔(35)に通して互いに連結する。このフック(32)は螺線杆(8)にピン(36)とピン(37)で連結されている。これにより調整軸(24)は螺線杆(8)に吊り下げられると共に摺動体(10)を吊り下げ、摺動体(10)が回転軸(16)と連結腕(18)を介して障子(1)を支え、障子(1)が釣合部材(4)にて吊り上げられている。

【0012】釣合部材(4)のねじりばね(9)のねじり力の調整手段は、上記調整軸(24)のほかにその調整軸に制動力を与える制動片(38)と、該制動片を調整軸に押しつけるカム面(39)と、上記制動片を保持すると共に制動片を制動方向と解除方向に移動させる保持部材(40)を具備している。制動片(38)は円柱コロ状のもので調整軸(24)のまわりをかこむように2個等間隔に配置されている。カム面(39)は摺動体(10)の拡大孔(23)の内周面に制動片(38)に対応するように2個等間隔に形成されている。このカム面(39)は周方向に進むに従い半径が大きくなる弧状に形成されている。保持部材(40)は筒状部(41)を有し、この筒状部(41)が調整軸(24)の拡大部(26)と摺動体(10)の拡大孔(23)に嵌合している。筒状部(41)の上端は軸受孔(22)の段部(42)に係合すると共に下端は調整軸(24)のフランジ(43)に係合して、調整軸の上方への移動を阻止している。筒状部(41)はその周壁に貫通孔(44)を有し、この孔内に筒状コロの制動片(38)が挿入されている。保持部材(40)は筒状部(41)から半径方向に延びるレバー(45)を有し、該レバー(45)は摺動体(10)の底面の2個のストッパー(46)、(47)間にて揺動される。レバー(45)がストッパー(47)に突き当たっているときは、制動片(38)はカム面(39)の最も深い位置を取って中立状態にあり、調整軸(24)に押しつけられず、調整軸は非制動状態である。レバー(45)を矢印(A)方向に他のストッパー(46)に突き当たるまで回転させると、制動片(38)はカム面(39)で押されて調整軸(24)に制動力を与える。巻きばね(49)は保持部材(40)の筒状部(41)に嵌合されて、その一端が保持部材側に引掛けられ、他端が摺動体側に引掛けられて、保持部材(40)に制動する方向への回転力を常時与えていて、調整軸(24)の制動状態を保持している。

【0013】調整軸(24)はその下端面に溝孔(50)を有し、この溝孔にドライバーの刃先を差し込んで回転される。調整軸(24)の回転は、該軸に対する制動力がレバー

(45)の操作(矢印A方向)にて解除されている状態にてなされ、調整軸(24)を矢印(A)方向にまわせばねじりばねのねじり力が増大し、時計方向にまわせばねじり力が減少される。なお、ねじりばね(9)の巻き戻しは調整軸(24)に対する制動力を解除するだけでもなされる。このようにしてねじりばね(9)のねじり力は障子と適正に釣り合うように調整される。

【0014】障子(1)はその上框(51)に施錠手段が設けられ、該手段の施錠にて障子が回転軸(16)まわりに回転するのを阻止し、解錠にて障子の回転を許容する。この施錠手段としての施錠部材(52)はケース(53)と、該ケース内に摺動可能に挿入された錠杆(54)を具備し、錠杆(54)は施錠方向に常時ばね(図示せず)で付勢されている。錠杆(54)はその先端面が弧状に形成され、さらにつまみ(55)を有する。錠杆(54)の先端面は筒(6)に嵌合してその筒を案内面として障子(1)と共に上下動する。この錠杆(54)は窓枠の縦枠で挟まれて、障子(1)の傾動を阻止する。つまみ(55)で錠杆(54)を引込位置に後退させると、錠杆(54)は窓枠の縦枠(2)とのかみ合い位置から外側に移動し、解錠状態となって、障子(1)の傾動を可能にさせる。

【0015】

【発明の効果】本発明は窓障子と釣り合うねじりばね(9)のねじり力を調整する手段として、ねじりばねを回転させる調整軸(24)に制動片(38)をカム面(39)で押しつけて制動力を与えたり、その制動片の押しつけをカム面で解除可能にし、上記制動片を保持部材(40)で保持し、該保持部材に制動方向の回転力を常時与えて制動状態にし、逆転させることにより制動解除状態にするように構成されているので、上下動の窓用の釣合手段の釣合力の調整が確実かつ容易でしかも軽快にでき、しかも大きな制動力が得られて釣合力の保持を長期間にわたって確実にすることができ、またその構成が簡単で製作組立が容易である。

【図面の簡単な説明】

【図1】本発明の釣合装置を窓に取付けた状態を示す正面図である。

【図2】本発明の釣合装置の正面図である。

【図3】上記釣合装置の右側面図である。

【図4】上記釣合装置の底面図である。

【図5】図4のV-V線断面図である。

【図6】図5のVI-VI線断面図である。

【符号の説明】

1 障子

4 釣合部材

6 筒

7 ナット

8 螺線杆

9 ねじりばね

10 摺動体

10

20

30

40

50

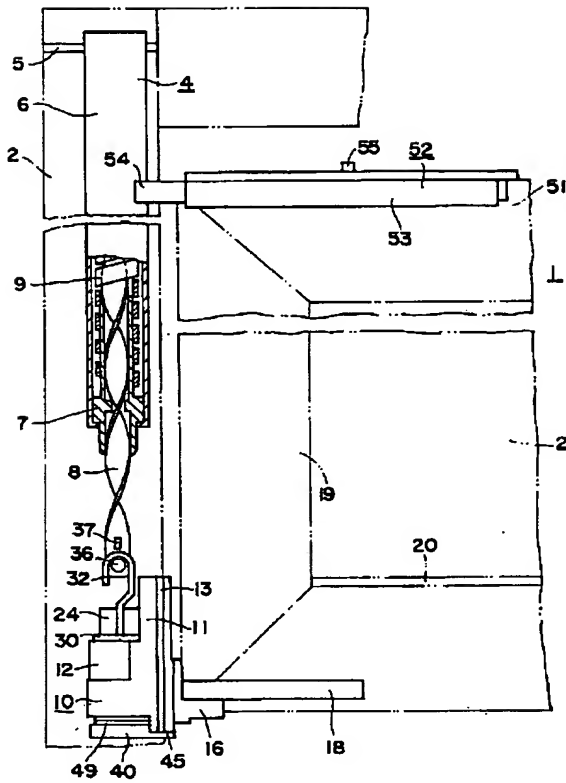


16 回転軸  
18 連結腕  
22 軸受孔  
24 調整軸  
32 フック

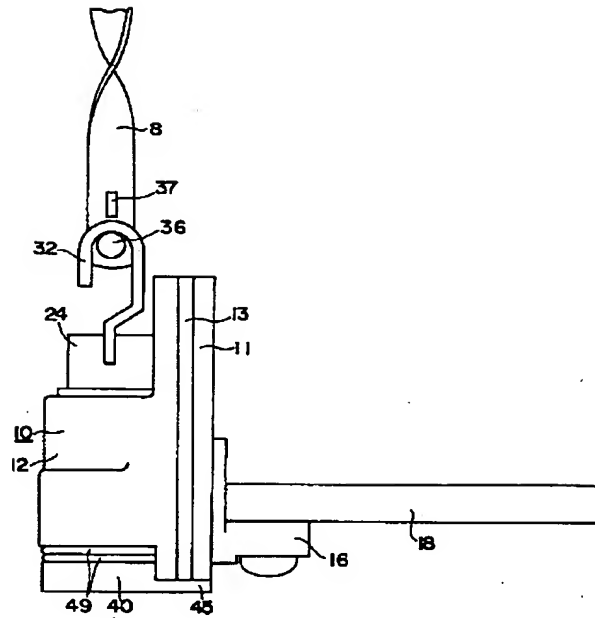
\* 38 制動片  
39 カム面  
40 保持部材  
49 巻きばね

\*

【図1】



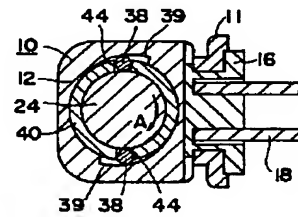
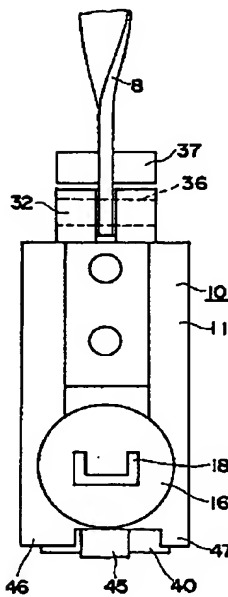
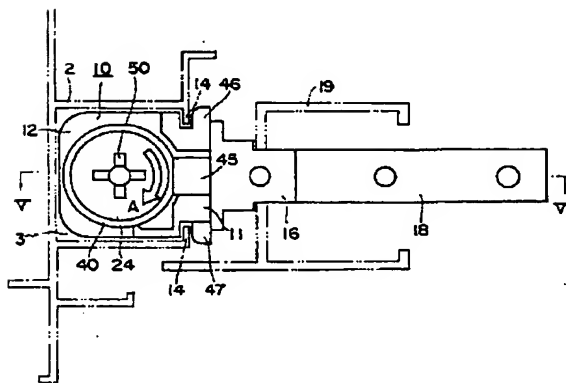
【図2】



【図3】

【図6】

【図4】



(5)

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【図5】

